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Histology of the Lens and Its Capsule.

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The preparation and presentation of a paper on any subject of interest to the medical world of today with its teeming productions in all departments of scientific research, is indeed a hazardous undertaking.

It is not always easy to determine the lines where good taste and the evidences of good judgment become attenuated, or cease altogether, and the overshadowing by presumptuous privileges in medical literature begins.

It is not always wrong to come before a scientific body with a rehash of the lore of others, any more than it is wrong to review their experiences, note their successes and failures, and strive to profit thereby.

The recorded wisdom of the past is a fountain from which all may drink; and while the earnest student and honorable essayist will not stoop to the character of the plagiarist, he may with credit to himself and the profession he represents relate the results of his efforts, guided as they may have been by one or more of the various methods formulated by the masters of our art.

Our present knowledge of the physiology, histology and pathology of the eye, also the improved methods of treatment now in vogue, have been developed during the past fifty years.

In 1846, Cumming called attention to the fact that the eye is luminous, and about the same time Brucke showed that "if accomodation is fixed eminating rays may be caught by the observer." Helmholtz, in 1851, took up the line of research, and utilizing the promulgations of Cumming and others who had preceded him, gave to the profession the ophthalmoscope.

As the instrument approximates perfect adaptability, our means of determining slight degrees of capsular and lenticular opacities become more nearly complete.

The ability to view and study the inner structures of the eye, and the ease with which degenerative changes could be detected, opened up a new field for investigation and gave to ophthalmology an impetus never before known in its history.

The histology of the lens and its capsule at once became interesting and of vast importance in connection with a clear understanding of the etiology of cataract.

Structural changes in these organs are of interest because they are always attended by a lessening of their transparency, and a consequent impairment of vision.

The capsule or membrane which encloses the lens is probably structureless, although good authorities differ widely regarding its histology.

The anterior capsule is of greater interest to the ophthalmic surgeon than the posterior, because of its importance in connection with operations for the relief of cataract; and also because of its connection with the mechanism which gives rise to the phenomena of accomodation.

The capsule and its contained lens are of epiblastic origin and we are not surprised to find entering intimately into histology the epitheloid cell. The thickness of the capsule varies, it being thickest in the region of the anterior pole of the lens; its thickness at this point increasing as age advances.

Immediately behind the attachment of the zonula of Zinn it becomes thinner, and

according to Becker is always thinnest at the posterior pole.

The inner surface of the anterior capsule, we are told by physiologists, is lined by pavement epithelium; but Becker says, "Strictly speaking, it is not correct to say epithelial membrane, inasmuch as beneath the attachment of the zonula are formed irregular granules of various sizes, and of clearly defined outlines closely packed and which have around them but a small quantity of protoplasm."

According to the views of many these are young cells, and by some histologists they have been called embryonic cells. In the central zone of the anterior capsule these cells are more fully developed; arranging themselves in the form of a pavement epithelium, but in the peripheral region this irregularity is lost and the undeveloped cells are packed in without regard to order, but their presence is not noted beyond the attachment to the anterior capsule of the zonula.

This mass of irregularly arranged cells is, without doubt the lens matrix, and from the cells constituting it are developed the lenticular fibres.

It is through the agency of these cells that the lens developes, and the transmission of food through them and its metabasis while in transit; that gives to the lens structure its pabulum.

Let functional activity be checked or arrested in these cells and the nutrition of the lens is interfered with, resulting almost invariably in opacities in that organ.

The lens, which is an outgrowth of the cellular structures that we have attempted to describe in connection with the capsule, will now engage our attention.

Of its gross anatomical boundaries, we will not treat.

Its only organic connection with the rest of the eye is through the agency of its matrix and the zone of Zinn. Its greater convexity rests in hyaloid fossa, and its lesser is pressed upon by its anterior capsule rendered tense by the force communicated to it through the suspensory ligament.

The organ resembles in contour the ordinary double convex lens. Its measurements are difficult to obtain, because of the constant changes taking place in its diameters; these changes resulting from the changes in force. One authority tells us that "the anterior elliptical segment measures, through its larger axis, 4‴ to 4‴ .1, and its smaller axis 1 4-5‴ to 2⅓,‴ whilst its posterior surface presents a parabolical curvature of 3¾‴ to 5 1-10‴ parameter."

The relation of the lens to the other portions of the dioptric apparatus constantly changes; hence the difficulty in accurately determining its relations to the surrounding parts. Careful examination of a suitably prepared eye will show that two-thirds of the ciliary processes are found anterior to a line drawn through the equator of the lens perpendicular to the eye's axis.

The cell mass found in the peripheral zone of the anterior capsule in young subjects is the part from which lenticular fibres are developed. Becker says the smallest of these cells are found in groups in the protoplasm, and that they are constantly crowded back and formed into rows behind each other. From this point well formed cell walls can be recognized, the cells growing in length and assuming an oblique direction backward until by them concentric lamina are formed.

The more centrally they are located the more dense and flattened they become, and this increase in density as we approach the lens axis has given rise to the notion of a lens nucleus.

The refractive powers of the lens increases from equator to axis and from surface to center, which indicates an increase in density as the center of the lens is approached.

The new fibres or lens tubules are formed rapidly during early life, but when maturity is reached their formation is less active and the matrix zone narrows.

In every lens there is to be seen a stellate figure which varies in contour as age advances. It is seen in its simplest form in early life. At this period we find a star of three rays which meet on the surface of the

lens in an angle of 120°. The anterior surface gives one upwards and two obliquely downwards; posteriorly two are found extending upwards and one downwards. These lines represent the terminations of the lens fibres. They consist of a homogeneous substance which is transparent and possesses the same refractive index as the fibrous portions of the lens. Each lens fibre extends from an anterior to a posterior star ray. No single or individual fibre extends from the anterior to the posterior pole; but if its point of origin is near the equator on its anterior surface its posterior terminal approximates the posterior pole of the lens. Arranged in this way the mechanism suggests a mass of springs and as such they act; for when released from pressure by relaxation of the anterior capsule and the zonula, the antero-posterior diameter of the lens is increased.

The lens fibres are delicate tubules and contain an albuminous fluid, and when unimpaired they give to the lens its elasticity. When functional activity in the lens matrix is impaired, nutrition is arrested or falls below the necessities of the organ, and in time opacities appear and vision is impaired.

Astigmatism.

Read before the Kansas Medical Society at Wichita, May, 1891.

By C. KLIPPEL, M.D., Hutchinson, Kas.

Mr. President, Ladies and Gentlemen of the Kansas Medical Society.—

Inasmuch as this paper will be addressed largely to the general practitioner, and as it is he who may enter into the discussion of its subject matter to a greater or less extent, we shall endeavor to avoid the use of technicalities as much as is consistent with clearness, and strive to bring it within the proper understanding of all.

We do not pretend to add anything new or original on this important subject, but merely to touch up those points which would assist the general practitioner in arriving at a correct diagnosis and giving his patient proper advice in regard to treatment. To attempt anything more would consume more time than can be allotted this paper. Most every general practitioner has some knowledge of the mechanism of myopia and hyperopia, and of their proper remedy by the use of glasses; and yet a great many are so situated, from a lack of proper apparatus and the press of a busy general practice, that they will often advise their patients to go to a jeweler and get a pair of spectacles. The patient selects what seems to suit him best (that which gives him clearest vision for reading), but the same uncomfortable symptoms continue, possibly even grow worse. His headache does not improve; after reading a while the blurring of vision returns, and the letters again run together. He tries again and again with similar results, and finally returns to his physician, who, anxious to relieve his patient, tries the sedatives, the anti-periodics, the anodynes, and narcotics, but all with only temporary relief. He stops now and analyzes his case with more care than ever. His patient is a school boy, age fifteen, good family history, appetite good, sleeps well, and apparently is in good general health. But his symptoms always come on after diligently applying himself to his books, especially by lamp light. He again concludes it is an error of refraction, but the conditions are not relieved by either concave or convex glasses, and he is again in doubt.

Now, this brings us up to the consideration of a few laws or principles of philosophy upon which astigmatism as well as other errors of refraction depend.

Refraction is that change in direction which a ray of light undergoes when passing from a rare to a denser medium or *vise versa.*

A ray of light passing from a rare into a denser medium is bent toward the perpindicular let fall upon the point of contact, as for example, passing from air into water, glass or similar substances. This refraction or change of direction takes place only with those rays which strike the surface obliquely, and we can very readily learn from this law how a convex surface of a more dense medium will converge rays of light and a concave surface diverge them.

The light which strikes any opaque object is reflected in straight lines from all points of this object, and these lines or rays brought to a focus upon a screen will produce an image of the object.

Now, this is just what takes place in the eye. Rays of light emanating from different points of an object impinge upon the cornea, and by its power of refraction, together with that of the other refracting media, these rays are again brought to similar points upon the retina, and a picture of the object is produced in detail.

The eye, considered as an organ of refraction, is composed of four distinct refractive media, viz.: the cornea, aqueous humor, crystalline lens, and vitreous, which, when considered as a whole, have the power in the normal eye of bringing parallel rays of light to a point, or, in other words, of focusing them upon the retina.

An eye that will focus parallel rays upon the retina while the accommodation is at rest is called emmetropic. One that will not bring parallel rays of light to a point upon the retina without the assistance of accomodation is called ametropic. Hence, when we speak of an emmetropic eye, we mean one whose refractive power is normal; but when we speak of an ametropic eye, we mean one that is either myopic, hyperoic, or astigmatic.

In the myopic eye the antero-posterior diameter is too long and the focus is formed in front of the retina.

In the hyperopic eye this same diameter is too short and the focus falls behind the retina. Now, by the act of accommodation the refractive power of the lens can be changed so that the focus is made to fall upon the retina. Any change in the curvature of the cornea would in like manner affect the focus, and if we will bear these facts in mind we will have no trouble in understanding the mechanism of astigmatism.

For example, we may take a convex spherical lens, which has the same radius of curvature in diameter, and allow the light of a lamp to fall upon it at right angles to its circumference and the rays will be brought to a point on the opposite at its focal distance. But now take a convex cylindrical lens and expose it to the light in the same way and we will find that instead of the light being brought to a point it will be projected as a bright line because the lens has refracting power only in one diameter.

In the same way we may take a lens which has a shorter radius of curvature in the vertical than the horizontal diameter, and we will find that it will not give us a definite focus, but there will be one central brighter spot and a less luminous line running from it toward the circumference in the same direction as the axis of greater curvature. This is in a measure the condition which exists in astigmatism; it being an unequal refraction in the planes of different meridians of the same eye, owing to a shorter radius of curvature in one direction than in another.

The crystalline lens may be the seat of unequal refraction arising from inequality of curvature in its several meridians—incipient cataract or a deviation from a perfect central position.

But for practical purposes the astigmatism of the lens may be disregarded, as a vast majority of cases are caused by anomalies of the cornea and the lenticular astigmatism is usually slight in degree.

Astigmatism is very frequently congenital. It is, however, caused by injuries, surgical operations, ulceration of the cornea, and contraction of the lids from different causes.

A history of some of these conditions may sometimes materially assist in reaching a diagnosis.

Asthenopia, or weak sight, and headache are very frequent symptoms of astigmatism, and are usually the first discomforts complained of. These are produced by the effort of the accommodation to overcome the asymmetrical refraction.

Suppose the radius of curvature in the vertical plane of the cornea is considerably shorter than in the horizontal. The rays passing into the eye through this plane would be focused further forward than those passing in through the horizontal plane.

Now, in order that a correct image may be made upon the retina, the ciliary muscle

must render the lens more convex in the horizontal meridian, so as to overcome the unequal refraction.

If any prolonged effort of the eye is attempted, as reading small print for several hours or doing fine needle work, we can readily comprehend that the ciliary muscle would become very tired, and eye-strain with its concomitant headache, drowsiness and sometimes sick stomach would be the inevitable result.

Continue the work beyond this point, and the tired accommodation is no longer equal to the task, and blurring of vision must result from the unequal refraction. These symptoms are not always in proportion to the amount of refractive error in a given case, but a very slight degree in a highly wrought nervous person will cause more trouble than a much higher degree in a more phlegmatic temperament.

This is very strikingly illustrated by the two following cases:

February 26, 1891, Mrs. M., age thirty-two, came to my office to have her eyes examined on account of inability to read but a short time without becoming sleepy and poor distant vision. Did not complain of headache except when trying to do fine needle work. Her distant vision was only 20-80 in right eye and 20-60 in the left. It required a concave cylinder No. 10 (-4 D. axis 155°) for the right eye and a concave cylinder No. 11 (-3.50 D. axis 35°) for the left to bring the vision up to 20-30. With these she was enabled to recognize people across the street and do most any kind of needle work.

April 18, Miss W., age nineteen, asked me to prescribe for sick headache, as she termed it. On careful inquiry I elicited the following facts, to wit: Patient was not able to read longer than a half hour without rest at any time, and scarcely at all by lamp light. Had lately been doing considerable close needle work, but suffered with aching in the eyes, headache and sick stomach nearly all the time. Her distant vision was 20-30 in both eyes.

Under atropine I could detect both with the ophthalmoscope and the test letters and lines that there was astigmatism, but it was perfectly corrected and vision brought up to 20-20 in both eyes by convex cylinder No. 54 (75 D. axis 90°), and after she had worn her glasses a short time all the unpleasant symptoms disappeared. To prove that these symptoms all originated from her error of refraction, I had this young lady lay her glasses aside while she tried to pursue her needle work. She only continued her work a little over an hour when her symptoms reappeared.

On another occasion she had been visiting an aunt who resides some blocks away, and on returning home she tried to read the morning paper, but soon had to lay it aside on account of the same train of symptoms. Since this experience she wears her spectacles constantly.

We might cite a number of somewhat similar cases, but these two will suffice to illustrate the two extremes between which there are numerous gradations of means.

It is sometimes no easy task to arrive at a satisfactory diagnosis in cases of slight astigmatism. This is especially true in young vigorous subjects.

We are sometimes very forcibly impressed with one of Webster Fox's axiums on this subject. He says: "Astigmatism is an invisible and illusive imp of mischief, requiring much keenness and patience to hunt him down. His hiding place the ciliary muscle, his disguise amblyopia. He hates atropia as his father was said to hate holy water."

There are several different methods of testing for astigmatism, but some of them are impracticable for the general practitioner and a very simple apparatus is sufficient for all practical purposes, and its cost is nominal. In fact it can be obtained from most any good optician free of charge. It consists of Dr. Green's test card and two sets of test types. The test card is made like an ordinary clock dial with black lines radiating from the center to the numbers round the margin. One set of Snellen's test types and one of Dr. Pray's astigmatism types.

The Snellen types are used principally to test the relative acuity of vision, and by directing the patient to begin with the largest

letters and continue until he reaches those which he can no longer read, we can compare that with the normal and calculate how far he falls short. The test letters of Dr. Pray are composed of alternating black and white lines arranged in large letters, with the lines in different letters running in different directions.

These cards should be hung upon the wall where they will be exposed to good light and at such a height from the floor that the center of the card will be about on a horizontal plane with the observer's eye when in the sitting posture.

The patient should be seated twenty feet from the test cards, and first directed to read the Snellen's letters, and the results noted.

If the eye is emmetropic, he should read the line numbered 20, and it should be indicated by the fraction 20-20.

If he could only read the one numbered 40 we would indicate the acuity of vision by the fraction 20-40 and so on.

Does it fall below 20-20 with some letters indistinct, we should test him with the lines on the dial. Now, if the eye is emmetropic, myopic or hyperopic these lines should all appear equally black. But if astigmatic some will appear black and distinct while the others will appear dim, and sometimes the group of three lines running at right angles to the lines that are distinct will be almost fused, and appear like a band.

The lines in the test letters of Dr. Pray will in like manner appear distinct in the same direction as the distinct line on the test dial, and indistinct in the same direction as the blurred lines.

These tests will sometimes fail, but in a majority of cases will answer every purpose and enable the physician to be reasonably sure of astigmatism, if it exists. There are cases, however, which will require an exhaustive test with the test lenses after paralyzing the accommodation, and this requires special apparatus which the general practitioner does not generally have at hand. Here the ophthalmoscope is often a very valuable auxiliary, but it requires considerable practice and special training to be able to use it with definite or satisfactory results.

It is the duty of every physician to relieve the suffering of his fellow man, no difference what the cause may be, and the physician who neglects to properly advise his patient who is suffering from some error of refraction is just as culpable as he who allows him to go through life with a broken bone or fixed limb without proper treatment.

In error of refraction the physician's duty does not end with advising his patient to have it thoroughly and accurately corrected, but to insist upon it that he wears his glasses as advised by the oculist.

This is very important in *all* errors of refraction, but especially so in astigmatism, because patients realizing the fact that by special effort they are enabled to see fairly well are liable to become careless about the use of glasses, frequently doing without them when they should wear them all the time.

The Etiology and Treatment of Nasal Catarrh, with Special Reference to the Deviated Septum.

Read before the Kansas State Medical Society at Wichita, Kansas, May 14, 1891.

By HAL FOSTER, A.B., M.D., Kansas City, Mo.

Mr. President and Gentlemen.—

Few diseases have, until in recent years, at least within the last decade, occupied a more obscure position as regards their pathology and therapeutics than those involving the nasal passages. Such, as is generally acknowledged, being the case, it it not surprising that chronic nasal catarrh should be classed among the "Opprobria Medicines," giving use to the somewhat general impression that it is an incurable disease.

It seems to me to be our duty as medical men to determine whether this belief is based upon the reliable testimony of carefully conducted scientific investigation, and if not, to promptly condemn the circulation of such an erroneous opinion.

In pursuance of a line of inquiry, recommended by Jarvis, of the Union of New

York, in 1880, let us seek the solution of this unsettled question by discovering and removing the cause and effects. This line of thought has been extended and considered more in detail, the part played by the deviated septum in nasal catarrh, accentuating as Jarvis did in 1880, pressure irritation produced by the contact of the septum with the turbinated tissues.

In order to simplify and at the same time systematize the description of this deformity, I have for several years employed a classification which, at least, possesses the merit of simplicity, in addition to other advantages already enumerated by me.

Deviation of the septum narium may obviously be either in character, osseous, cartilaginous, osseo-cartilaginous, or hypertrophic. In form, these varieties may be either localized, that is, limited to a small portion of the septum, or general, involving the whole extent or a large surface of the septal structure. I cannot discuss here my reasons and right for employing so simple a classification; suffice to say, for the present, it accords with the various conditions, and has afforded me an excellent guide for the surgical management of these conditions.

Osseous deflection of the septum rarely occurs alone, being almost invariably associated with the cartilaginous form; namely, osseo-cartilaginous. Long-standing deviated septa always exhibit hypertrophic changes over their most prominent points. These changes are due to pressure against structures lying opposite; i. e., turbinated bones. By far the most frequent form of deviated septum is the cartilaginous variety. As regards the question of the manner in which the deviated septum plays the part of the cause, I would ask attention to two most prominent and common factors, accounting for the production and persistence of the catarrhal processes in the majority of cases, namely, pressure, irritation and defective nasal drainage. Farther on, I shall have occasion to show that these conditions are also traceable to other important underlying causes of a more or less direct nature. The part played by pressure irritation in the causation of rhinitis hypertrophica, I described in another paper.

My deductions were based upon the careful and continuous study of a case exhibiting a frequent pathological condition, consisting of a thickening of the mucous membrane overlying the posterior borders of the vomer shown in this drawing taken from a life sketch. I was persuaded that the hyperthrophical tissues were caused by pressure of the turbinated structure lying opposite. This impression was received by my observing that the shape of the tumefaction was cup-shaped, and that the depression corresponded in shape and size with the convexity of the nearest turbined bone. At times, the depression was entirely concealed by the temporary impaction against its surface of a congestive turbinated hypertrophy.

Restriction of the erectile structure soon revealed the mischief it had wrought by persistent contact, or, in other words, by prolonged pressure irritation. Do not understand me as attributing any particular pathological importance to this condition. I only consider it of value as proving the existence of a special determining factor in the nasal catarrh, namely, pressure irritation. The drawing, taken from a life sketch, exhibits the action and effects of pressure irritation. The right anterior naries shows the deviated tissue pressing against the opposite turbinated structure. In the right posterior naries is seen the result—a post-inferior turbinated hypertrophy, almost entirely occluding the choana.

The next drawing was taken from a life sketch, showing antero-inferior turbinated hypertrophy in the left nostril, caused by the combined catarrhal extension, and respiratory irritation from a deviated septum, closing the right nostril. I will now consider the second etiological factor mentioned by me—defective nasal drainage. All intelligent observers must have been impressed with the fact that the peculiar inclination and semi-ovoid form of the floor subserved a useful purpose, namely, that of a gutter for the efflux of nasal secretions and accretions.

This view, described several years ago,

hesitatingly gained ground in my mind, until I find myself now prepared to present it in a more elaborate and favorable form. This diagram, built up from drawings of the normal structures, will enable you to trace with me the nasal discharges from their origin, through the pharynx and gutter, until, with the salivary and buccal secretions, they find their way into the stomach. The heavy dotted lines represent the course of the nasal fluids. Beginning at the anterior portion of the nasal gutter, the nasal mucus streams slowly downward over the easy convexities of the turbinated bodies, and striking the nasal floor, gravitates backward along its gradual incline toward the posterior naries and pharynx. Posteriorly it is prevented from oozing down along the uvula and dripping into the pharynx or larynx, by a slight elevation of the mucous membrane over the palate, which I have denominated "the palatine prominence." This peculiar ridge-like elevation, beginning at the lower edge of the vomer and extending backward to a point just over the uvula, has, as far as I have been able to ascertain, been assigned no special function; the absence of this constant condition, in numerous drawings of the posterior naries, is a familiar example of its oversight.

An attack of the acute uvulitis, with obliteration of this palatine prominence and consequent discharge of mucus into the larynx and pharynx, will convince one of its value in the economy of the throat. After leaving this point, the nasal fluids stream down in a fan-shaped manner along the pharynx to the gullet. The discharges are prevented from falling into the larynx by the semicircular ridge formed by the arytenoid and Wrisberg prominences and their various folds.

The importance of the system of nasal drainage is very clear when one considers that it not only disposes of the natural excess in moisture employed for olfaction, moistening the respirated air, etc., but also is a means for the removal of the accumulations from the eye and accessory nasal cavities.

This system once understood it is easy to appreciate the consequences due to disturbance of its balances. Prominent among disturbing causes is the deviated septum. This interference on the part of the deviated septum is invariably associated with more or less turbinated hypertrophy. To those combined conditions are to be attributed most of the troubles due to defective drainage. Nasal mucus, of the proper specific gravity, readily finds its way into the stomach as just described. The obstruction presented by the deviated septum stops the nasal fluids on their way into the throat, the retardation leading to evaporation and consequent inspissation of the nasal discharges, producing the well-known train of symptoms, such as clogging of the nostrils, dropping of phlegm into the pharynx and larynx, etc.

The importance of pressure irritation and defective nasal drainage merits careful consideration. Deviation of the septum can be traced as originating from certain well-defined causes, conspicuous among which I might mention heredity, traumatism, and acquired deviation of the septum.

Heredity.—Several years ago I reported a case of congenital stenosis, relieved by operation, in which was noted a peculiar malformation of the superior maxilla, and I sought to establish a relationship between it and the co-existing coryza and the turbinated hypertrophies. Since then, by close investigation and comparison, I have been able to supply the necessary links in a chain of evidence which demonstrates at least to my mind that one of the most common, indirect causes of catarrh is to be found in the conformation of the hard palate. This peculiar malformation is transmitted from parent to offspring, and by its proper recognition we can at once account for the origin of a vast majority of certain cases of chronic nasal catarrh.

Attention has been called from time to time to the various congenital conditions of the head and soft palate, known as cleft palate, bifed uvula, etc. I shall, however, have nothing to say concerning these malformations.

Two years ago a medical student whom I was examining called my attention to the great height of the roof of his mouth. I

had been treating him for an extreme deflection of the nasal septum; the deviated structure was pressing directly against the left lateral nasal wall, and had been in this position as far back as he could remember. I at once associated the high-pitched narrow palatine arch with the bend in the septum, reasoning that inasmuch as the septum lay directly over the point of the highest elevation there must be corresponding bulging of the structure, its amount depending upon the extent of encroachment of the elevated and contracted arch upon the nasal chambers.

Subsequent observations not only proved this inference to be correct, but also enables me to trace the condition in many instances to its origin, the parent. On comparing this drawing, taken from Prof. Parvis's collection, with the normal palatine arch, you will readily discern certain well-defined differences. The distance between the alveolar ridges is much greater in the normal specimen. The palatine arch may be considerably higher than the cut and yet not constitute a pathological condition. No two palatine arches are exactly alike, and some show an elevation readily mistaken for a deformity. The important distinction to bear in mind is the abrupt elevation along the line of median raphe. When such a condition is observed, we may at once look for, and, in my experience, invariably find a corresponding deviation of the septum. Such, in numerous cases observed by me, has always proved the case; and the condition has been invariably associated with a chronic rhinitis. Indeed, I believe it possible to diagnosticate the existence of a chronic nasal catarrh by the simple inspection of the roof of the mouth, or what amounts to the same thing, an impression in wax or plaster sent from any part of the world.

Having interested myself from time to time in the study of the external nose, and particularly in the persistence of certain types in the same family, I was induced to consider it a special hereditary manifestation. By employing a similar method of reasoning to the internal configuration of the nares, I have been able to trace the same condition back to a common parental origin.

This, in my experience, occurs as an hereditary manifestation with great constancy. Once the pecular nasal type of the parents recognized, its modification in the children is easily determined. Sometimes this condition, with the co-existing intranasal catarrhal processes, can be inferred or diagnosticated at a distance by the conformation of the nose and the alveolar borders of the upper jaw.

Frequently these cases are said to be suffering with a scrofulous taint. I would emphatically express my disagreement with this too prevalent idea of a diathesis or specific constitutional taint being the determining factor in the majority of those suffering with nasal catarrh from childhood.

Furthermore, the view that these manifestations, though not retraceable to one or more generations, are nevertheless to be attributed to diluted syphilis of several preceding generations, seems to me even more unreasonable, and yet we find it mentioned in recent works on the subject. Although scrofula and inherited syphilis are responsible for certain cases of catarrh, it is high time that these stigma, too often placed upon innocent and intellectual families, should be removed. I will now briefly consider the second mentioned direct cause of a deviated septum, and indirect cause of nasal catarrh, namely, traumatism. The effects of injury and an etiological factor are identical with those resulting from heredity. So much so is this the case that I am not surprised to find the bulk of easily discernible deviated septa attributed to blows of various kinds for want of a better explanation. There is now but little excuse for such a mistake, for although the deviated septum of a malformed maxilla may be increased by injury. The discovery of such a condition, associated with the usual signs, furnishes reasonable grounds for the assumption that it is hereditary, and not of traumatic origin. This influence is of course strengthened by the history of the patient. Traumatic deviation of the septum, though occasionally found in the higher strata of society is more frequently met with in low life; the exposure and recklessness of the latter class of indi-

viduals rendering them more liable to injury. As an example, I might state that the nostrils of a prize-fighter or reckless sparrer rarely ever escape a chronic nasal catarrh.

It matters little what may be their so-called powers of resistance; the strongest must as surely succumb to nasal catarrh as a child similarly afflicted from a button in the nose. By acquired or induced deviation (the third variety mentioned by me,) I include such internal agencies as prolonged intra-nasal pressure upon the septum, as produced for instance by turbinated hypertrophies, polypi, and various tumors, the action of foreign bodies, inflammatory infiltration, the frequent employment of the finger for feeling the nostrils, etc.

The indirect influence of the high-pitched palatine arch and deviated septum observed in the production of aural, pulmonary, and eye troubles, also gelatinous polypi, and other intra-nasal growths, and its interesting etiological relation to phthisis must be passed by for the present with a little more than a mere mention.

I shall conclude my remarks with a necessary brief consideration of the treatment of deviated septa. Employing a modified scriptural paraphrase of Dr. Bosworth's "And now abideth physiology, pathology, and therapeutics, these three, but the greatest of these is therapeutics." In other words, just in proportion as the first two elements add meaning to the third, are they to be valued as aiding in the one grand effort to ameliorate the misery of mankind.

To accentuate this point, I may be permitted to recall a remark made by a distinguished anatomist, the late Prof. Wm. Darling, who several years ago, after encouraging me to enthusiastically converse upon certain pathological conditions observed by me in the nose, suddenly interrupted the conversation with the remark, "But do you cure your patients?" That, gentlemen is the important question with all of us.

An experience derived from clinical work, has convinced me that no single method can be fairly recommended or successfully employed to remedy all deviated septa. Assuming the correctness of the propositions embodied in my previous remarks, I shall discuss the treatment of the deviated septum, as a most common cure of catarrh. A deviated septum must be removed to cure the catarrh. The very shape and structure of the septum warrants this assertion. We may meet bone, cartilage, or mucous membrane. The bone will dull or break our knives, the rongeur forceps may strip off and mutilate unnecessarily the mucous membrane, and either may unfortunately perforate the deviated cartilage.

I use cocaine, grains twenty, phenol, grains two, to prevent pain. Despite the numerous methods which have been advanced by laryngologists for the correction of malformed or displaced septa, no single procedure or device has evidently been invented which can justly claim the right of universal applicability for the successful treatment of the conditions met with in this deformity. It is even difficult to imagine a single instrument possessing the combined property of cutting with facility and precision the hardest bone or softest membrane. This, nevertheless, would be required of an instrument designed for the successful treatment of deflected septa, composed, as they may be, of hypertrophical mucous membrane, dense, elastic cartilage, or compact bone. In my hands the electric motor gives better satisfaction than anything I have ever used.

This is not an expression of dissatisfaction with earlier procedures, but rather an intention to make these operations more effective. Indeed, I rarely, if ever, complete an operation upon the septum by means of the electric drill alone, for the reason that delicate punches, cartilage-scissors and bone-forceps afford valuable assistance for the removal of adherent tissue, debris in the form of shreds of mucous membrane or cartilaginous and osseous asperities. The McIntosh or C & C motors are among the best.

The counter-electromotive force, generated by the motor force running at 1,800 turns a minute, with an eighteen ampere current in the field, is five volts.

I will present the history of a most inter-

esting case: Patient, age twenty-seven, druggist, consulted me February 17, 1891, in search of relief from a difficulty of breathing.

The left nostril was permanently stenosed and the right one though partially free would become periodically obstructed, and was a source of constant annoyance. Examination — anterior rhinoscopic inspection — demonstrated the existence of an extensive osseo-cartilaginous deflection of the septum to the left, extending as far back as the middle of the vomer. The patient did not manifest the slightest dread in submitting to an operation in which the electric drills were employed. The osseous and cartilaginous tissue was first cut away with the rasp drill, and subsequently smoothed down by means of the revolving nasal plane. Forty minutes were consumed in cutting an opening from the anterior free edge of the deviated tissue, the columna to the posterior opening about the middle of the vomer. This time included intervals of rest required for spraying the parts with cocaine and noting the progress of the operation. The loss of blood was unusually scanty.

One month after the operation the wounded septum had completely healed, leaving a large interspace between it and the lateral nasal wall for the entire length of the nostril. The patient stated that the great cause of his suffering — the difficulty in breathing — had entirely disappeared; nasal respiration being as perfect in the night time as during the day.

I cannot conclude my paper without acknowledging the courtesy extended me by the artist, M. J. L., who drew the sketches. I might add that any or all of the devices described by me can be obtained from McIntosh & Co., of Chicago, or the Physicians' Supply House of Kansas City.

The electric fan has been suggested as a means of lowering high temperature. It would cool the surface of the body and keep the insects at bay. The noise of the fan might annoy the patient.

The A. C. E. Mixture.

By J. C. REEVE, M.D., Dayton, Ohio.

I have responded to a request to prepare a paper on the anæsthetic known as the A. C. E. mixture, not only in order to present my individual experience with it, but from the conviction that the merits of this mixture are not duly appreciated by the profession, and from the fact that nowhere, not even in special treaties on anæsthetics, is there to be found a full and complete account of it. Moreover, further study of the subject of artificial anæsthesia is justifiable so long as the present diversity of opinion prevails as to which is the best agent for producing it. The diversity of opinion upon this point is striking in amount and extreme in degree. In our own country, were the profession to be polled, ether would doubtless receive a considerable majority of the votes. Still, chloroform has many able advocates; men of ability, of position, and of large experience, and throughout a wide section of this country, the southern states, chloroform is the favorite anæsthetic. In Europe the case is far different. During several visits there I have never seen ether administered. Some years ago I went to Italy under the impression that it is the home of etherization. Visiting many hospitals of several of the leading cities, I did not see ether once used. During the same journey I was unable to find an ether inhaler in the city of Paris. There, as in the hospitals of several cities in Germany visited last year, I saw only chloroform administered. In England ether is gaining ground. A reaction against chloroform began soon after the dangers of this agent were recognized, and first found expression in the report of the Royal Medico-Chirurgical Society in 1864, which formally recommended anæsthetic mixtures. This reaction received a powerful impulse in 1872, from an address before the British Medical Association by Dr. Joy Jeffries, of Boston, and another in 1889 by the address of Dr. Teale before the same body. During the last seven or eight years the London *Lancet* has strongly

commented upon the frequently appearing notices of death from chloroform in its pages, and urged avoidance of its dangers. For the latter purpose it has thrown its powerful influence in favor of the A. C. E. mixture. From that source we learn that this mixture "is now used largely," while it is added that a fatal accident from its use has rarely been recorded. In the pronounced diversity of opinion, which prevails as to the relative merits and demerits of the two great anæsthetics, and which has existed more or less markedly ever since these agents came into use, I find, therefore, justification for presenting the claims to your confidence of a combination of the two with the addition of alcohol.

The origin of the A. C. E. mixture has already been stated, or rather its first authoritative presentation. This was by the report of a committee on chloroform appointed by the Royal Medico-Chirurgical Society of London in 1864. This committee made a formal and strong recommendation of several anæsthetic mixtures as means of avoiding the dangers of chloroform. One was composed of chloroform one part, to four of ether; one of chloroform and ether in the proportion of one to two; and another, which is the subject of this paper, which consists of alcohol one part, chloroform two parts, ether three parts—the "A. C. E." The proportions are by measure; its constituents should be of the best quality, the alcohol as nearly absolute as possible. This mixture has been recommended and used by Dr. Harley for several years previous to 1864, and with him it therefore originated. The committee found in mixtures of the two anæsthetics an agent which produced modified effects of each alone, more efficient than ether, safer than chloroform. Experiment upon animals in their hands showed a far less depressing effect upon the heart than chloroform alone. They especially recommended the combination under consideration, which, with the theoretical considerations in its favor, gave it the lead as compared with the others. Playfair's recommendation of it in labor, when chloroform seems to disagree, has doubtless promoted its use in England, and aided in bringing it into the favor spoken of by the *Lancet*. Throughout the section of country where I reside it has been used a great deal. Its advantages were presented to the profession in a published lecture delivered by me upon invitation, before the class of the medical college of Ohio in 1875, and I know many professional friends who use this anæsthetic exclusively. It has been the sole anæsthetic used by the St. Elizabeth's Hospital, of Dayton, from its origin in 1878. The only other mixture which can rival the A. C. E. in frequency of use is that known as the "Vienna Mixture," which consists of two parts of chloroform to six of ether, which is said to have been administered 8,000 times without a death. Billroth uses exclusively a mixture of chloroform, three parts, ether and absolute alcohol, of each, one part, and believes it to be less dangerous than chloroform alone.

That union of the effects of various anæsthetics produced by one being administered subsequently to another, as when the patient is brought under the influence of nitrous oxide, and the anæsthesia continued by ether will not be considered here. It is doubtless the safest method known, but it requires special apparatus and is, therefore, not at all adapted to general practice.

Is the alcohol in the A. C. E. mixture of any value? I have not only heard the question asked, but have known the negative to be maintained by men whose opinion is worthy of consideration. So far as the vapor of alcohol tends to sustain the action of the heart, its presence is certainly no detriment whenever chloroform is inhaled. Yet in view of the presence of ether at the same time this argument in favor of it need not be pushed. It is upon chemical grounds that the presence of alcohol is justified, the three constituents forming rather a chemical combination than a simple mixture. This fact has an important practical bearing. The objection to the A. C. E. mixture always heard and constantly urged is that the three ingredients evaporate at different rates, and therefore the patient is soon getting the sole effect of one of them, the chloroform, instead

of the three combined. The objection is not sound, nor is but partially true. There is no doubt that the alcohol exerts a modifying influence upon the rate of vaporization of the other two constituents. The influence was recognized by the committee which originally presented the combination. They especially recommended the A. C. E. as preferable to the other mixture, "on account of the uniform blending of the ether and chloroform when combined with alcohol, and the equable escape of the constituents in vapor." Ellis, in his work on the "Safe Abolition of Pain," [London, 1866,] devoted a chapter to the rates of evaporation of anæsthetic fluids, separate and combined. He states that the rate of vaporization of the united fluids is, in vacuo, equal, and under the circumstances of ordinary administration it is modified. During the past year I called the attention of a correspondent of the *British Medical Journal*, who had urged this objection to the A. C. E. mixture, to this view of the influence of the alcohol. He referred the question for decision to the London *Chemist and Druggist*, and in the issue for October 11, 1890, will be found the response of the editor, which is that "the alcohol would unquestionably influence the evaporization of the more volatile constituents, as the mixture is partly at least of the nature of a solution, i. e., ether and chloroform are dissolved by the alcohol." A modifying influence of great practical value may therefore be justly claimed for the alcohol, at least until farther chemical evidence is adduced to the contrary.

I present the special advantages of the A. C. E. mixture, as compared with the two leading anæsthetics. First, in comparison with ether: it is far less unpleasant and very far more prompt in producing anæsthesia. Whatever unpleasantness attaches to the mixture depends upon the ether it contains, and it is less unpleasant than ether therefore, because less pungent and because the inhalation is of shorter duration before unconsciousness supervenes. The irritating effect of its vapor upon the air-passages, the distressing sense of suffocation it causes, the extreme struggling often occasioned, the long time required to produce anæsthesia, these are the drawbacks to ether as an anæsthetic. I have witnessed some painful scenes of etherization, even in hospitals, under the hands of experienced administrators. I have met with several patients who, for a second inhalation deliberately chose chloroform, even after fair statement of the relative danger, rather than again undergo the painful sense of suffocation once experienced. In promptness of action the A. C. E. mixture leaves nothing to be desired. In how short a time surgical anæsthesia could be caused by it I cannot say, for rapidity of the anæsthetic process introduces very certainly a new and unnecessary element of danger. By the mixture patients can be anæsthetised as certainly as by chloroform itself, and as rapidly as it is prudent to do it with that agent. It may be admitted that with the closed-bag inhaler, whereby the patient breathes not only the vapor but his own expired air, anæsthesia can be as promptly effected by ether as by any agent, but in this way the sense of suffocation is increased in intensity although shortened in duration, and the need of a special apparatus places this mode outside the limits of general practice. Parenthetically it may be said that experience has not shown the danger to be increased by this mode of administration of ether.

There is but one point upon which to compare chloroform and the mixture. That point is of course safety. Were it not for the greater danger attending its use, chloroform would stand without a rival. The proof of that danger, positive and relative, has been so recently ably presented to the profession by Profs. Wood and Hare that it is needless to go again over the ground. That when experimenting upon animals sudden death takes place far more frequently under chloroform than under ether, does not depend upon the testimony of one or of a few observers, but is the universal testimony of experimental physiologists. That in man the death-rate under chloroform is considerably higher than that under ether is the conviction of everyone who has studied the subject, although the exact rates can

never be given in figures. Except in obstetrical practice, this agent has too often shown its fatal power, and no one can be a constant reader of a British medical periodical without being painfully struck with the frequently-appearing notices of death under its influence. In the great power of chloroform relatively to ether, greater than is that of brandy to wine, can be readily found an explanation of its lethal effect. It is to lessen and to modify this power that the minor anæsthetic and the alcohol are added. But it is not alone as diluents of chloroform that the other constituents act. They oppose to the constant and never-failing depressing influence of chloroform upon the heart their own stimulating effect. It is true that under ether sudden failure of cardiac action sometimes takes place; death has occurred quite as suddenly and as unexpectedly under this agent as under chloroform, but depression of cardiac power is very exceptional under ether; it is a constant feature of the action of chloroform.

We are now prepared to consider what parts or portions of the dangers attending the process of artificial anæsthesia are avoided or obviated by the mixture. In experimenting upon animals it has been constantly observed that sudden deaths occurred in a rapidly-increasing ratio as the amount of chloroform vapor carried by the air was increased. In other words, rapidity of introduction, independent of quantity inhaled, has a powerful influence in causing accidents. Clinical experience teaches the same lesson. I think no one can make a careful study of the particulars of death under chloroform without being struck with the frequency with which it is stated that the dangerous symptoms occurred immediately after the addition of more of the anæsthetic to the sponge, napkin, or inhaler. Inhibition of the heart from the sudden impression of the vapor upon the terminal nerves of the respiratory tract has been an explanation of this mode of action. But the high authority of Wood has been given against this view. Still I am not prepared to abandon a theory which has the sanction of Kappeler and of Richardson and of Lauder Brunton. But it is needless to debate the point, because it matters little what the explanation may be, so long as we have the facts. The facts are that when animals are going under chloroform, any fresh administration causes most remarkable variations in the blood pressure and in the heart's action. "There is frequently a sudden dip in the pressure to the extent of forty millimeters out of a total of one hundred and ten." Further, that in man sudden death has frequently occurred upon rapid introduction of vapor into the blood either by deep inspirations or by superchanging the air. Of 133 fatal cases sixteen presented this feature, and in eight of them the fatal effect followed immediately upon the addition of more chloroform to the sponge. In this mighty influence of the rate of introduction upon the effects of the agent is alone to be found, I believe, a rational explanation of the deaths caused by the inhalation of a very small quantity of chloroform, a quantity sometimes measured by minims, and also an explanation of the occurrence of death in patients who have taken it with safety not only once but several times before. In the mixture, then, this great and dangerous power of chloroform is held in abeyance. The sudden impression upon the terminal nerves of the air-passages cannot be produced, nor can a large amount of chloroform vapor be rapidly introduced into the blood. Dilution with air it may be said will effect the same results. This is true, but such dilution can never be relied upon, unless the quantity of liquid poured out is measured and the administration effected by an apparatus which will regulate the supply of air and of vapor. When chloroform is not thus administered, by inattention, by inadvertence, conditions may at any time occur which imperil the life of the patient. The importance of low percentage of vapor of chloroform in the air inspired, of slow and gradual progressive increase in amount, the bearing of the rate of introduction upon the safety of the progress have been taught over and over again from the beginning, yet their value has not been duly appreciated; certainly they have not been by those who administer this anæsthetic on a towel or napkin

folded or unfolded, a plan which insures irregularity of amount inspired in a given time. Again the varying rate of introduction by varying respiration should ever be kept in mind, and is of the utmost importance when the stronger anæsthetic is given. During ordinary respiration, twenty cubic inches of air are inhaled at each inspiration; under deep inspiratory effort not only twice or thrice this amount, but as much as one hundred cubic inches may be inspired! The influence of varying temperature upon the amount of chloroform which air will carry is a point in this connection which deserves careful consideration. At 85° F. air will contain and carry twice as much as at 65°. The rate of inhalation, therefore, may be nearly doubled within a possible change of temperature. Much of the danger, then, which attaches to the administration of chloroform from too rapid introduction of the vapor, and from a violent impression of this powerful agent upon the air-passages, from a possible carelessness of administration, is obviated by its dilution with the other agents, while part of the anæsthetic effect is produced by the ether, and the greater part of the depressing influence of chloroform upon the heart avoided if not antagonized.

The objections which have been advanced to the A. C. E. mixture deserve careful consideration. When first proposed, two were advanced, which, if true, would have prevented this anæsthetic from obtaining any place in practice. They were, that from want of power, as compared with chloroform, the patient would suffer pain, and the length of time necessary to induce anæsthesia. Neither of these deserve a moment's consideration. Although for all prolonged and severe operations I always give a hypodermatic injection of morphia and atrophia, which of course deeply modifies the anæsthetic process; still many operations and procedures do not require this, and I have never in a single instance failed to obtain profound and satisfactory anæsthesia. The time required has already been stated to be as short as consistent with safety. Not infrequently I have heard, it is true, of failures to obtain a satisfactory result with the A. C. E., but I am satisfied that when this occurs it is for want of proper use of it. No especial mode of administration is required. The first three golden rules for anæsthetics should never be omitted: First, the apparatus should not only permit a free current of air, but for all agents except ether be such that it cannot be cut off; second, calm and sustain the nervous system of the patient; third, by small doses at first gradually accustom the air-passages to the pungency of the vapor. Then give with a free hand.

There are two pathological conditions in which there is tenable objection to the use of the mixture. These are old subjects with bronchitis, or a tendency thereto, and patients with organic disease of the kidneys. In such cases the A. C. E. is objectionable, as ether is also, and on account of the ether it contains.

The objection most persistently and most frequently urged against this mixture is the different rate of evaporation of its ingredients. This objection has already been considered and shown to be far more theoretical than practical. For many years, however, it influenced my mode of administration. I would accept no other means than a large cup-shaped sponge, with this, a squeeze of the hand upon every fresh addition of liquid, not a shadow of standing room is left for this objection. A good sponge, of proper shape and size for this purpose, is difficult to find and expensive. Of late years I have used Allis's ether inhaler, and find that with this the objection is of no practical force whatever, even in prolonged administrations.

A far more serious charge has been made against the mixture, and one which, if true, should banish it from practice. A series of experiments upon animals has been published which go to show that this is among the most dangerous of anæsthetics, even far more dangerous than chloroform. Thus the results were for ether a mortality of 16.6 per cent.; for chloroform, 66.6 per cent.; second series, 58.5 per cent.; A. C. E., 75 per cent. These are the results obtained by Dr. B. A. Watson. Looking carefully over the details

and results of these experiments, and with a deep sense of the responsibility attaching to a decision upon a most important point of practice, I make the following comments: First, experiments upon animals which corroborate clinical experience are unimpeachable; when the results run counter to it, preference must be given to observation upon the human subject. There has been a large experience with the A. C. E. mixture, an experience which extends over a quarter of a century, and so large that if the mixture were anything near as dangerous as chloroform, to say nothing of being more dangerous, it would long before this have been apparent. Second, the conditions of the experiments were such as to destroy the value of the results. To occupy twenty minutes in inducing the anæsthetic condition, to continue the process without break for two hours, to use animals which have been anæsthetised over and over again, is a method so different from that followed at the bed-side, that to compare the results of the one to the other is unjust and illogical. Third, the experiments show too much if reason is to be permitted at all upon the point at issue. That by adding to chloroform two substances which weaken its power, and both of which counteract its depressing influence upon the heart, it is thoreby made more potent for evil, is again illogical, and has not a particle of theoretical or clinical support. Finally, without questioning the ability or honesty of the observer, than which nothing could be farther from my intention, these results cannot be accepted until they have been obtained by other observers, while they stand in direct opposition to those of the committee of the Royal Medico-Chirurgical Society.

The objection may be advanced against the mixture that it contains chloroform, that this agent has been shown to be more dangerous than ether, and that, therefore, it should be abandoned entirely in favor of the safer anæsthetic. The objection would be unanswerable if the record of ether as to safety was an unbroken one. Unfortunately this is not the case. Unfortunately again the ratio of danger cannot be stated in figures; the number of deaths under each anæsthetic has certainly never been given with accuracy; the number of administrations of each it is impossible to determine. Under these circumstances judgment must be rendered from experiment upon animals, upon theoretical grounds, and imperfect clinical results. A careful study of these brings me to the conviction that the mixture is equally as safe as ether, and I act daily upon this conviction in one of the most responsible professional duties of life. But in rendering judgment, the factors of convenience and comfort to both patient and practitioner should not be set aside. In these respects ether has marked disadvantages; it is, as termed by the committee which recommended the A. C. E. mixture, an "inconvenient anæsthetic," and I feel fully justified in considering such points as comfort and convenience until it is positively shown that danger is increased by so doing.

I have made a careful study of accidents under the A. C. E. mixture. I can find but three deaths reported, which are here appended. That these form a complete mortuary list is not probable, considering the mass of periodical literature to be examined. Cases of dangerous symptoms and narrow escapes under anæsthetics are quite as instructive and as worthy of consideration as cases of actual death. Of these under the A. C. E. there are two to be found quoted in Turnbull's Manual of Anæsthetics, third edition, and one occurred to my friend, Dr. Wiest, of Richmond, Indiana. I have found one other reported, and in this chloroform had previously acted very badly, as in one of my own cases. My own experience of unfavorable results with the mixture extends to three cases of dangerous symptoms. Two of the patients were young females and one was an adult male. The condition in all was alarming; the two females responded readily to measures of restoration; the male patient seemed for a short period to be lost. These cases are enough to show that the A. C. E. mixture is not absolutely safe. It is not recommended as such. No such anæsthetic exists. The three accidents which have occurred to me have taken place during twenty-six years of active practice. I

began using the A. C. E. mixture within a year or two after its first recommendation, and I have used it ever since, except in obstetrical practice and for very young children. I have used it for all sorts of patients; for all kinds of operations, minor and major. I recognize fully how insignificant is any individual experience as to anæsthetics, except under very exceptional circumstances, but personal experience always speaks with a loud voice to the person who makes it, and so I may be pardoned if I have acquired strong convictions of the practical advantages and the safety of this mixture. It is to be regretted of course that to the three deaths published the number of administrations cannot be added, but this is impossible. The mixture is "largely used in England," according to Buxton. The *Lancet* speaks of "extensive experience" having demonstrated its efficiency and its far greater safety as compared with chloroform. Adding to these statements the fact of a very considerable use of the mixture in this country, and it is certainly safe to conclude that there has been such an experience with it that a rate of mortality at all approaching to that of chloroform must already have become apparent. I fully believe it to be as safe an anæsthetic as any, and one by which the dangers of chloroform and the inconveniences of ether are alike avoided.

Granulations of the Os.

By P. DAUGHERTY, M.D., Junction City, Kas.

Among all the diseased conditions of the uterus this is probably the most frequent, consequently of most interest to the general practitioner. To recognize the pathological conditions of an organ we must first be familiar with its physiological conditions.

The anatomy and physiology of an organ must be understood before we are capable of correctly diagnosing and treating its diseased conditions.

The uterus is a little pear-shaped organ about three inches in length by one and a half to two inches in breadth at the widest point, with an antero-posterior diameter of about one inch, and weighs from one to one and a half ounces. This little organ is one of great possibilities, but it is only to the infravaginal portion of the cervix that we wish to direct your attention to-day. The virgin cervix is cone-shaped, about one-third of an inch in length, and is smooth and firm to the touch.

The transverse diameter of the apex is about eight lines, the antero-posterior about two or three lines less. At its center we find the os tincæ, situated between the lips, and looking backward and downward.

In multiparous married women the os is more open and softer to the touch, and the cone shape of the cervix is less perfect. In multiparæ you almost always find the fish-mouthed os, enlarged and softened lips with cicatrices around the edges. The infravaginal portion of the cervix differs materially in its anatomy from the body of the uterus. It contains a much larger per cent. of connective tissue, and you cannot separate its muscular layers as you can in the body of the organ. Its mucous membrane is thicker and corrugated, and of a paler color. The longitudinal ridges on the one side fit into the depressions on the other, so as to completely obliterate the cervical canal. Its blood vessels have thicker walls and smaller lumina than the body of the organ. The mucous membrane of the uterus is attached directly to the internal muscular strattum, while in the cervix you will find a layer of connective tissue interposed between them.

The uterus is a very vascular organ. The uterine arteries, branches from the anterior division of the internal illiac, pass downwards and inwards between the folds of the broad ligaments to a point a little below the level of the os externum, where they make a sharp turn upward, running along the lateral border of the womb until they reach the center of the organ, where they anastomose with the descending branches of the ovarian arteries. Each artery gives off numerous horizontal branches which anastomose with those of the opposite side which supply the various segments of the uterus. Each segment of the uterus having an inde-

pendent blood supply, flexions of the organ cannot result in any general obstruction to its circulation.

The main nerve supply of the uterus is derived from the hypogastric plexuses. The cervical canal is lined with ciliated columnar epithelium, while the parts external to it are lined by squamous epithelium.

ETIOLOGY.

The causes of this trouble are numerous. The congestions normally occuring at each menstrual period may, through some improper conduct or exposure, be indefinitely perpetuated. Normal labors, with its almost necessary traumatisms about the os, abnormal labors, and abortions, all of which furnish a good culture medium for pathogenetic microbes, and a ready entrance to the tissues are the most frequent causes of this trouble.

PHYSICAL SIGNS.

Upon digital examination you find the cervix enlarged; it no longer has that smoothness and firmness to the touch that you find in the normal cervix. But it feels soft and velvet like, with a sense of unevenness, and on withdrawing the finger you find it covered with a bloody mucus. Through the speculum you will see the cervix around the os intensely red, the granulations standing out giving it a strawberry appearance. You will usually find the parts covered by a white glairy or cream colored mucus which completely obscures the diseased part until it is wiped away. However careful you may be in removing this mucus, you will usually produce bleeding from the granulations. You will usually find the same condition extending to the cervical canal. This you can readily detect by the introduction of your applicator and wiping out the canal. If you find the cotton on your applicator bloody you may know that the disease extends to the canal.

The much mooted question among authors as to whether these changes are ulcerative or not we will pass over very briefly.

Lawson Lait says "That in nine hundred and ninety-nine out of every thousand there is no ulceration."

W. S. Playfair says "It is in no sense of the word an ulceration, since the epithelium is the only structure destroyed."

C. D. Parmer (American system of Gynecology, p. 588) says "Much of the dispute among authorities as to whether these changes are ulcerative or not . . . is a contention about non-essentials, and arises from a misunderstanding among the disputants as to what each considers ulceration."

Dunglison defines an ulcer as a solution of continuity in the soft parts. The extent and depth of this solution of continuity ought not to be the points at issue. Is there any solution at all? "A simple destruction of the epithelial layer, from whatever cause, of whatever duration, is an ulceration process, superficial though it be." W. H. Byford held to similar views.

Ruge and Veit claim to have demonstrated that these apparently raw surfaces seen through the speculum are covered with cylindrical cells so thin that the inflamed parts beneath show through, giving the red appearance. But the fact of the bleeding upon the slightest touch remains.

SYMPTOMS.

The symptoms are legion. The most constant is probably the leucorrhœa, which is usually profuse, white, thick, glairy, and tenacious; sometimes yellow and muco-purulent, and occasionally streaked with blood. Pain in the back with a dragging sensation in the lower part of the abdomen; pains shooting down the thighs, headaches, gastric disturbance, and malaise. Menstrual irregularities, often profuse and painful, sterility, pain in defficating and micturating, flushings and hysteria.

Copulation is painful in most cases, and attended with bleeding. The disposition of many women is entirely changed by this affection. Some will become morose, gloomy, and despondent; others irritable, fretful, and petulant. In two out of every three cases where marriage has proven a failure this affection can be held responsible.

PROGNOSIS.

The prognosis is favorable in most cases. Of course it will depend altogether upon the

control you have over your patient. If they will abstain from sexual intercourse and give the parts rest, coupled with proper hygiene, your treatment will be successful if properly applied and systematically carried out.

Whenever you have a case under treatment that progresses nicely for a few weeks, until you think that she is nearly well, and she returns to you with the inflammation about the os lit up again and all the symptoms aggravated, question her closely as to what she has been doing.

Some time since I had a case of this kind, and several times I congratulated myself on having my patient about well, when she would return as bad as ever. Upon inquiry I learned that she was in the habit about once a month of inserting the nozzle of a syringe into the cervical canal and pumping water into the uterus to prevent conception, as she stated. I prevailed upon her to stop this foolish practice, and she was soon well.

Some women are over solicitous about themselves, and resort to frequent digital examinations of themselves, producing traumatisms with their nails and inoculating themselves with pathogenetic microbes.

TREATMENT.

In the treatment of these cases we have to deal with an inflammation. Prof. Senn says that "Inflammation *per se* is no disease, but an effort on the part of the organism and the tissues affected to eliminate or render harmless the primary cause. The treatment must be in each individual case purely symptomatic."

A proper appreciation of the nature and tendencies of inflammation is an essential prerequisite to rational treatment.

In most forms of inflammation the presence of a specific micro-organism has been shown to exist, and its etiological factor in the causation of the disease proven by inoculation experiments. In the inflammatory conditions, where no such positive proofs can be furnished, we reason from anology that undiscovered micro-organisms or their ptomains are the cause of the trouble.

The first changes noticed in inflammation is in the capillaries and the small arteries and veins on either side of the capillary vessels. This change is a dilatation of the vessels. Next, if the inflammation be only moderate, an emmigration of leucocytes takes place.

The microbes which produce the inflammation being brought in direct contact with the fixed tissue cells, an active proliferation of the cells takes place which furnishes the bulk of the inflammatory product. Metschnikoff has shown that these cells can remove dead material from the system and destroy pathogenetic micro-organisms. These cells he calls phagocytes. The leucocytes he calls mikrophagi, and the fixed tissue cells, which perform the same function, mekrophagi. The proliferation of connective tissue cells forms a breastwork which prohibits the dissemination of micro-organisms in the tissues, and a fierce battle is at once inaugurated between the micro-organisms on the one hand and the phagocytes on the other. The medical attendant can in many cases turn the tide of battle in favor of the phagocytes by cutting off the reinforcements of the micro-organisms. This you can do by keeping the parts in an absolutely aseptic condition. Again you can assist the phagocytes in their struggle with the pathogenetic micro-organisms by giving to the parts mechanical and physiological rest.

The ideal treatment for granulations of the os will in the near future be a purely surgical procedure. The diseased mucous membrane will be dissected away and healthy mucous membrane sutured in its place. Wolfler has recently shown that this method is practicable by repairing obstinate strictures of the urethra by cutting away the diseased membrane and suturing in healthy in its stead.

If your patient is anæmic, tonics will be required. If there is subinvolution, ergot and chloride of potash are the remedies. With the local treatment we proceed as follows: First, irrigate the vagina with an antiseptic solution — three per cent. solution of carbolic acid, or one to 1,000 of bichloride of mercury; then with clean fingers introduce a clean speculum and inspect the parts, wiping away any mucus that may still remain

with antiseptic cotton. If you have reason to believe that the disease extends to the cervical canal, (and it usually does,) wrap your applicator with some antiseptic cotton and carefully introduce it into the canal. Do not use force in introducing it, but change the position of the handle until it will drop in of its own weight. Carefully wipe out the canal and then examine your applicator; if you find it covered with a bloody mucus, there is disease there. Then again wipe out the canal and apply with your indicator a ten per cent. solution of chromic acid to the diseased canal. This treatment has succeeded well in my hands. In some cases where the chromic acid has failed me, I have used the iodoform pencils with good success. I now take my powder blower, charged with subnitrate of bismuth, and thoroughly dust the cervix, after which I place antiseptic cotton or wool tampons around and beneath the cervix, so as to support and give rest to the parts, avoiding all friction and keeping the parts thoroughly antiseptic. This dressing I allow to remain from eighteen to twenty-four hours. I instruct the patient to remove it at the end of that time, and again wash out the vagina with an antiseptic solution. In very severe cases I repeat the treatment every day; in ordinary cases, every second or third day. Always advise caution in the use of the syringe, that no damage is done to the inflamed cervix. Enjoin strict abstinence from sexual intercourse or other intermeddling with the parts. This treatment, you will see, fulfills the indications above noted; it cuts off reinforcements of micro-organisms by keeping the parts aseptic and guarding against further traumatisms; and at the same time gives mechanical and physiological rest to the parts, thereby favoring the phagocytes in their battle for life against the invading army of pathogenetic micro-organisms. The local use of subnitrate of bismuth in granulations of the os I learned from Prof. Engleman, of St. Louis. Iodol, iodoform and boracic acid may be used in the same way.

CONNECTICUT has no medical law.

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TOPEKA, KANSAS, DECEMBER, 1891.

BEWARE of the man who has no enemies.

CAMPHOR menthol will be found efficatious in pruritic and herpetic and eczematous eruptions. It promptly allays local irritation, contracts the capillary vessels and exsanguinates the part.

SLEEP is "nature's balmy restorer." The old saw, "six hours for the wise and eight for children and fools" is nonsense. During growth, proper physical development, especially of the brain, demands plenty of sleep; and the more nervous or precocious the child the more sleep should be the rule. If not, we may expect premature death or an early and too-intellectual growth. Until the fifteenth year is reached there should be ten hours sleep; from fifteen to twenty, nine hours; and after maturity, while each may judge for himself, eight hours is a good rule. Plenty of refreshing sleep will prevent more nervous derangements than medicine will cure.

MENTHOL chrystals and camphor gum coming into contact with each other form a clear oil-like fluid. When combined in equal parts, and united in the proportion of twenty per cent. to eighty per cent. of lavoline, or in such other proportions as the sensibility of the part may require, and applied with a devilbiss or other appropriate atomizer to the upper air passages, they contract the capillary vessels, allay irritation, relieve pain, arrest excessive discharges, correct vitiated excretions, and increase the size of the passages. Properly applied, we may confidently predict prompt relief in almost every form of hypertrophy of these passages in summer asthma (hay fever), the various forms of catarrh, both acute and chronic rhinitis, pharyngitis, laryngitis, and allied affections. It is needless to say that the best results will obtain from applications at the onset of the disease.

MILK is nature's ideal food. It contains all food elements in proper proportions in a pleasing and easily-digested liquid form. Its casein is a rich and readily-appropriated nitrogenous compound. Its cream and butter are the most digestible and agreeable of foods. Its sugar of milk represents the sugars and starches, while its salts contain all the various minerals in the body. Yet we find persons who say they can't drink milk. This is quite reasonable, for it depends upon their manner of taking it. Thinking they dislike it, and that it will disagree with them, hastily swallow a glass full. Reaching the stomach *en mass*, the gastric juice forms it into a large solid curd, which producing a sense of weight and discomfort, if not ejected is slowly digested, the interior of the mass not being reached by the digestive fluids until the outer coat of the mass is dissolved. Taking milk by the cupful is like taking meat in as large pieces as will pass the oesophagus. In the stomach it becomes a solid food. Let those who think milk disagrees with them take it slowly—a sip at a time—and when practical with other food, and they will change their opinion. Invalids should always take it in this way, and when it disagrees with bottle-fed infants, nipples with smaller openings should be used. In commending milk, we mean good milk. To be good, the cow that yields it must be healthy. If stabled, the stable must be kept clean, tight, and well ventilated, and her food a proper admixture of bran and grain, straw, hay, and grass, with an abundance of pure water; and she should be permitted gentle exercise in a lot during the day. When the milk is drawn it should be in a clean, scalded vessel, and when strained be placed where it will cool quickly, surrounded by pure air. It should be used before decomposition has commenced. Failure to comply with this last requirement will largely account for the death rate among children during June, July, and August.

Treatment of Gall Stones by the Hypodermatic Injection of Chloroform into the Gall Sac.

It is scarcely necessary to say that the internal treatment of gall stones is unsatisfactory; every physician knows this to be true. The operation of cholecystomy is formidable and dangerous, and only to be attempted by the most skillful surgeon. The hypodermic injection of chloroform into the gall sac is not a dangerous operation. Any physician capable of properly using a hypodermic syringe can perform it. I called the attention of the profession to this method in the march number of the JOURNAL. Up to that time, so far as known, there had been no record of cases treated by this method. My first case occurred in July, 1888, and since then I have treated all the cases of gall stones coming under my care by this method, and I am glad to report that results have justified the means. Before using chloroform in this disease I had frequently used it hypodermically for the relief of pain in different parts of the body, but always in the muscular tissue. I was satisfied that it was aseptic and germicidal, and after testing its solvent properties by dissolving gall stones that had been secured from a recent case, I determined to make

the effort to dissolve the stones "*in situ*" by injecting the chloroform into the gall sac provided I could gain the consent of my next patient so afflicted.

CASE I. July 18, 1888, I was called to see Mr. D., aged forty-five years. Found him suffering with an attack of gall stones. The patient was jaundiced; stools clay colored; pains intolerable. After using the usual means recommended, including the use of chloroform per *via naturales* without relief, I explained to him the probability of relief by injecting chloroform into the gall sac. He being willing, I injected one-half drachm of Squibb's chloroform into the gall bladder. The relief of pain was immediate. The clay-colored stools disappeared and he was able to be about the house the next day after the injection, and was soon quite well. Did not have occasion to use any other remedy in this case. He has been free from attacks of gall stones since. In this case small gall stones were passed early in the attack, and in previous attacks gall stones had passed.

CASE II. June 11, 1889, was called to see Mrs. W., aged fifty years. Found her suffering from obstruction of gall ducts; skin, yellow. The attacks of pain were so distressing that large doses of morphia were necessary to relieve. In the beginning of the attack Mrs. W. was fat, well, and nourished, but she did not take much nourishment, and under the acute suffering emaciated rapidly. All efforts to give relief failing, I injected chloroform one-half drachm; this gave immediate relief. This injection was made June 29. On July 4th, pain recurring, a second injection was made by my colleague Dr. W. S. Lindsay, who was called in my absence. From this time no further treatment was necessary. Gall flowed freely, jaundice disappeared. This patient made a good recovery, and up to this date has been well. This patient had passed gall stones in a previous attack.

CASE III. Mr. J., aged fifty-five years. Was called to see him December 16, 1890. Found him suffering with an attack of gall stones. Had been sick several weeks. Symptoms off obstruction of gall ducts, marked. Injected chloroform as near as I could determine without incision into gall sac, with immediate relief. Placed patient upon appropriate diet. He improved rapidly, and at present writing patient is well. Cases might be multiplied, but this will serve to show that there is relief in chloroform administered in this manner. Dr. W. S. Lindsay has treated three well-marked cases of gall stones by this method, and the history of his cases are but a repetition of the good results obtained by me. I have recommmended this treatment to many of our physicians, but do not know that any except Dr. Lindsay have profited by the suggestion. Concerning danger, should the cloroform be thrown into the liver and into the peritoneal cavity. Experiments on animals have demonstrated the safety of the procedure. Quite a number of the physicians of Topeka witnessed the experiments on a dog when chloroform was injected into the liver and peritoneum. The results showing clearly that the use of chloroform hypodermically in the manner indicated is free from danger. S. G. STEWART, M.D.

A Source of Danger.

A medical student who was assisting the writer in a surgical operation a short time ago was asked to remove a fiber of cotton from the eye of the needle in use. He removed it with his fingers, but asked "why do you not blow it out like an operator did once," and then he was surprised when the wound suppurated? The student was satisfied that there was sputa blown on the needle or on the wound, or both, which finally set up inflammation, and suppuration resulted. This was an act of commission, but a surgeon who would so far forget himself would omit minor matters in the details of cleanliness.

How many of us could hold up our hands and vote in the negative in answer to the question, "In preparing for or during a surgical operation did you ever free the eye of the surgical needle by blowing through it, or bite the thread of in preparing sutures,

or wet the end of the suture with your spittle to twist it to enter the needle's eye?"

The surgeon should not cough or sneeze over the wound, and should caution all assistants and lookers-on to observe the same precaution, and especially in opening any of the cavities of the body. Laughing and much talking should be avoided. In laughing and in excited conversations the spittle is seen in a broad ray of sunlight in a room to fly several feet distant. The poison may be carried by the breath; and physiologists tell us that air passing the lungs, besides losing a part of its oxygen, undergoes the following changes:

1. Increase in temperature.
2. Gain of carbonic acid.
3. Gain of watery vapor.
4. Gain of ammonia.
5. Gain of a small quantity of organic matter.
6. Gain and occasionally loss of nitrogen.

The especial factor is the organic matter.

Experiments have been made in which animals have inspired air containing the sputa of tubercular patients with the result of inducing tuberculosis of the lungs and bronchial glands.

It is fair to conclude that a tuberculous surgeon or assistant, or one who has decaying teeth or open abscess of the gums, should take extra care to cleanse their person and clothing, and wear over the mouth and nose a moist aseptic sponge to breathe through during the operation or subsequent dressing of the wound.

Sweet Oil In the Treatment of Gall Stones.

The investigation conducted by the therapeutic section of the Philadelphia Polyclinic Medical Society in the *Cincinnati Lancet Clinic* favors the following conclusions:

1. It does not make any difference whether olive oil or cotton-seed oil is used. It is well known that much of the oil which is sold as olive oil is in reality refined cotton-seed oil. Experiments tend to prove that in all probability any bland oil will have the same effect on this disease.

2. Patients who received dessert-spoonful doses every three or four hours obtained the same prompt relief as those who took from five ounces to one and two pints in twenty-four hours.

3. Its action in all probability is in accordance with the theory of Virchow: "It is absorbed from the alimentary canal, is excreted by the liver, and is thrown into the bowels again through the biliary passages.

4. Its action consists not so much in dissolving the biliary excretion as in flushing, and in lubricating and washing out the passages of the liver.

Topeka Academy of Medicine and Surgery.

The regular monthly meeting of the Academy of Medicine and Surgery was held In Lincoln Post Hall on Tuesday evening, November 3.

President Dr. T. W. Peers presided.

There were present Drs. Sheldon, Pelton, O'Brien, Peers, Wall, Munn, Mitchell, McLaughlin, Powell, Stewart, Morgridge, Schenck, W. E. McVey, Magee, Colcord, Cannon, Lindsay, Righter, Rodgers, McClintock, Longshore and Bradley; and medical students Gundry, McClintock, Gilbert.

Drs. Ida Barnes and H. M. Smith were elected to membership.

Dr. Righter submitted, in writing, the following report:

August 10, 1891, I was called three miles in the country in consultation by Dr. Royce to see a case of puerperal convulsions. I took with me everything one might need in a confinement case—my obstetric forceps, hypodermic syringe, pocket surgical case, some chloroform, Norwood's tr. verat. viridi, chloral hydrate, and morphia tablets.

On my arrival at 10 o'clock, the doctor informed me that he was called at 4 o'clock A. M. and in the six hours the patient had had six convulsions. I examined her and found the os dilated to the size of a silver dime, and waited to see a convulsion which occurred at 10:30.

The patient, M. R., aged twelve years,

eleven and one-half months, unmarried. After I was satisfied that we had puerperal convulsions, I administered hypodermically 1-4 grain morphine and 1-150 atropia sulphate, and a few minutes later I gave her hypodermic of tr. verat. viridi (Norwood) of seven minims. The reason I gave her a hypodermic of morphia and tr. verat. is because morphia has been successful in the hands of some practitioners, and some say that verat. viridi is better, and as this was the first case of the kind I had ever seen, I wished to have success, and knowing both remedies valuable in puerperal eclampsia used them.

I was with the patient until 4 P. M. At 3 o'clock I terminated labor with the forceps a still born eight pound boy.

There were no labor pains from my first examination. The os would not dilate, and not having a Barnes' bag or any kind of dilator I used my fingers and thumbs, and dilated from time to time until I could apply the forceps.

She was left in the care of the attending physician, Dr. Royce, and he informed me that she had another convulsion at 6 P. M., three hours after delivery, and another convulsion at 11 P. M. She was unconscious from 4 A. M. to 6 A. M. of the next day, when she awoke and seemed as bright as usual. She recovered and was around in the usual time after labor.

The paper was received and declared open for discussion.

Dr. Sheldon asked if he had examined the urine, and Dr. Righter replied that he had not.

Dr. Sheldon thought it an interesting and important subject, and this case extremely so on account of the age of the patient. It would have been interesting to know if the urine contained albumen. We often find eclampsia when it is of a reflex character from indigestion. Had seen two cases caused by indigestion; both were relieved by emesis. Spoke of a case caused by a woman eating nuts, candies, etc. We may have cases without having albumen in the urine. Thinks there may be an excess of urea in the blood and a diminution of the excretion from the kidneys; in this way it acts as a toxic cause in producing puerperal eclampsia. He commended the use of morphia and atropia, chloroform and veratrum.

Dr. Munn thought that a combination of reflex causes and urea is the cause, and that urea is the most potent factor. Believes in bleeding both in plethoric and anæmic cases, then use morphia and atropia and chloroform.

Dr. Mitchell thought the treatment in this case should have been kept up until the nervous symptoms were under control. Thought bleeding was irrational. In pregnancy you generally have a depletion already. Modern methods are in advance of and an improvement on the old. Thought the pressure in the renal vessels causes nephritis, and the eclampsia the result. Indigestion may be the mediate cause, but the primary cause is behind this in the blood and nervous system.

Dr. Stewart spoke of a case in his early practice in which he bled freely and relieved the patient. The baby was delivered, and it had tonic convulsions.

Dr. Schenck.—"All's well that ends well" whether *post hoc* or *propter hoc*. He prefers chloral and bromides to opiates, as these remedies exsanguinate. Would give by enema if he could not do otherwise.

Dr. Morgridge referred to the case spoken of by Dr. Sheldon, caused by indigestion. Had seen many persons have convulsions from indigestion who were not pregnant. Almost all pregnant women have albumen in the urine. A pure case of puerperal convulsion will have albumen in the urine, but these convulsions may come without there being albumen present. Puerperal convulsions are due to anæmia or hydræmic plethora, a diseased condition of the kidneys from pressure. Thought the per centum of convulsions greater in the illegitimate than in the legitimate pregnancies due no doubt to the mental influence.

Dr. Colcord spoke of a case—the worst he ever saw—where there was excessive flooding. The cause in this case seemed to be from a rigid os. Thought bleeding would have been improper here. Spoke of the two

classes of cases — one of nervous origin, the other of uræmic origin. Has had good results with chloroform.

Dr. Pelton spoke of the indefinite understanding in regard to what puerperal eclampsia is. Puerperal convulsions are convulsions at the close of the puerperal state. Spoke of two classes — nervous and anæmic. A third cause is thrombosis. Many of these cases terminate fatally. Agreed with Dr. Sheldon as to indigestion being an exciting cause. Pressure on the uterine nerves causes an irritation that terminates in convulsions. We have eclampsia produced by both an anæmia and a hyperæmia.

Dr. Mitchell thought Dr. Pelton had failed to clear up the misunderstanding existing, and advised adhering in the discussion to the convulsions under consideration.

Dr. Pelton explained that he was not understood; that he had not reference to eclampsia in a person predisposed to epilepsy.

Dr. Lindsay said that in his first case he bled with good results. This was an illegitimate pregnancy. Thought chloral injections good, and would use cold to the back of the head. Whatever the exciting cause, try to remove it. Does not think where epilepsy has existed the convulsions should be classed as eclamptic.

Dr. Peers saw three cases which Dr. Lewis had, and had one of his own. Woman, four months pregnant, was unconscious. Bled. Used chloroform, chloral, and bromides. Spoke of another case where the convulsions continued for twenty hours; gave veratrum viridi, and the pulse came down. Spoke of seven cases, in five of which this drug was used. Referred to a Boston man who insisted that by keeping the pulse down below seventy the convulsions could be prevented. Thinks veratrum a valuable remedy, and that bleeding is proper in some cases. Bleed in plethora, but not in anæmia; in this class of cases you do a great injury. Give veratrum according to the influence on the pulse.

Dr. Longshore related a case and thought sometimes the dangers of eclampsia were overrated.

Dr. Rodgers thought the statistics given by those present were too flattering, and that they were greatly at variance with the statistics of the leading authors. Thought it would be interesting to have the members of the Society prepare statistics from their experience. Did not think bleeding advisable in all cases, plethoric and anæmic alike. It was a step backward. Wanted to know, in case you assumed albuminuria the cause, how you could treat the albuminuria successfully, as he thought we had no specific treatment for it at present. Thought epileptiform convulsions should not be excluded, as this form was recognized as one of the divisions of eclampsia. Thought there was an hereditary tendency, and cited three cases occuring in one family — three sisters.

Dr. Righter closed the discussion, touching the points gone over.

Paper was received and referred to the publishing committee.

Dr. McClintock asked and was given further time to report on "Surgical Treatment of Epilepsy."

Dr. Schenck reported having attended the American Public Health Association. Had a brief report, but did not care to take up the time of the Society.

The Society proceeded to elect officers for the ensuing year.

Dr. W. S. Lindsay was unanimously elected president.

Drs. Cannon, Pelton, Mitchell, Rodgers and Righter were the nominees for the vice-presidency, but Dr. D. F. Rodgers having a a majority of votes was declared elected.

Drs. Cannon, McVey and Magee were nominated to perform the duties of secretary. Dr. W. E. McVey was elected.

Dr. Magee was unanimously elected for treasurer.

Dr. O'Brien offered a vote of thanks to Dr. Peers for the courteous treatment he has given us in the discharge of his duties.

Dr. Sheldon moved a vote of thanks to Dr. Rodgers.

Adjourned to meet December 3, 1891.

D. F. Rodgers, M.D., *Secretary*.

The field of medicine is the world.

The Eastern Kansas Medical Society.

The fall meeting of the Eastern Kansas Medical Society was held in the parlors of the Delmonico, Leavenworth, Kas., October 12, 1891, at 7:30 P. M., President Dr. L. L. Terwilliger, of Lansing, in the chair.

Members present: Drs. S. E. Sheldon, M. R. Mitchell, D. R. Pelton, R. S. Magee and G. O. Morgridge, of Topeka; John T. Scott, of Holton; O. D. Walker, of Lawrence; Drs. O. C. McNary of Soldiers' Home, W. A. Van Tuyl, C. R. Carpenter, W. J. Van Eman, S. Phillips, C. C. Goddard, J. F. McGill, J. L. Hamilton and J. A. Lane, of Leavenworth; Drs. J. Punton and Hal Foster, of Kansas City, Mo.

Visitors: Drs. W. F. Richardson, of Havensville; and W. F. Sawhill, of Concordia.

New members: Dr. H. M. Smith, of Topeka, Chicago Medical College, 1891, Dr. D. R. Philips, of Leavenworth, Columbia Medical College, 1887, Belvue, Medical Hospital, 1889.

Honorary members: Dr. Flavel B. Tiffany, of Kansas City, Missouri Medical Department University of Michigan, 1874; Dr. H. C. Crowell, of Kansas City, Missouri, University of Vermont, 1875.

Board of Censors: Drs. G. O. Morgridge, M. R. Mitchell and O. C. McNary.

The first paper of the evening was read by Dr. Pelton, of Topeka, subject, "The Results of Nervous Reflex." By the aid of a diagram he traced the path of a peripheral irritation to the cerebral centres through the spinal cells, citing a case of phimosis which conclusively illustrated the grounds advanced in the paper. It will be published in the KANSAS MEDICAL JOURNAL.

Dr. John Punton, of Kansas City, opened the discussion by saying: "The subject which the doctor presents to the society is one of extreme interest to me, and cannot fail to benefit all students of neurology. On account of the literature being meagre, it renders the subject-matter of the paper more valuable. I suppose that this lack can be accounted for by the fact that there is so little definite knowledge of the true mechanism of morbid reflex acts, hence it becomes a question largely theoretical.

"I think I am correct when I state that the greater majority of reflex neuroses are found in infancy and childhood, and the reason for this is not far to seek.

"In studying the evolution of the various departments of nature we soon discover the elements of a plan or system which shows definite progress in the unfolding of its parts from the lower and simpler forms of existence to the higher and more complete.

"This gradual evolution or development is beautifully illustrated in the unfolding of the several parts of the central nervous system and partly explains the predominance of reflex neuroses in childhood.

"Soltman performed an elaborate series of experiments on animals and came to the conclusion that all the reflex inhibitory centers of both brain and spinal cord were wanting in early life. These experiments and their results have since been verified on the human subject.

"Dr. Hughlings Jackson conceives the central nervous system to be composed of three tiers of sensori-motor centers, all parts of the body being represented in each, the highest of which controls the two lowest; the latter being developed earlier than the former.

"Fritsch and Hitzig claim that the anterior lobes of the cerebrum possesses a controlling power over the lower centers and in these reside the higher inhibitory centers. They also prove that in infancy these lobes are imperfectly formed, while the lower centers are fully developed and this inequality explains the frequency of reflex neuroses in early life.

"Dr. Gowers gives it as his opinion that the higher function of nerve cells is inhibition, and that self-control and the capacity of being controlled are higher functions than the liberation of energy.

"The nature of morbid reflex acts, however, in adult life is not easy to explain, but they undoubtedly depend on some exaltation of the lower nerve centers, or some suspension

of the inhibitory power of the higher centers. We must remember that both the cerebro spinal and sympathetic systems are in intimate connection with each other, and with that of the brain and spinal cord, and that abnormal reflex conditions usually involve both of these systems. In the case which the doctor presents we find the phimosis the cause of the trouble. Now in congenital phimoses the skin is abundant and lax; but the mucous membrane is short, contracted and undeveloped. It is in this situation and not in the skin that the defect is situated.

"We also find in this situation both systems of nerves represented. The pudic nerve from the sacral plexus and the hypogastric plexus from the sympathetic.

"It is my opinion that we are not careful enough in our examination of disease and often-times the removal of some trival irritation is sufficient to guarantee a cure. The study of abnormal reflex action as a cause of disease demands our most earnest attention and our success in handling these cases will depend largely upon our knowledge of normal reflex-phenomena.

"In all the reflex neurotic conditions there is one or more of these elements involved, viz., an afferent and sensative fiber, an efferent or motor fiber and the nerve cell or center and these three elements constitute a reflex arc. In every case therefore, there is some disturbance in the normal interchange between the elements of the reflex arc involved.

"The doctor in his paper failed to call in question the treatment, so I will not allude to it."

Dr. Hal Foster: "With respect to nervous reflexes have found cases of asthmatic trouble due in all probability to reflex neuroses. Pressure from polypi and exostoses in nasal cavities, for when these were removed the asthma was entirely relieved. I have found these reflex troubles especially interesting."

Dr. Carpenter, of Leavenworth, said: "I will not attempt to go into the intricacies of the subject, but I will call your attention first to a case which in many respects is very similar to the one reported in the paper. I was called to attend a boy, six years old, who had suffered from birth with a very severe form of indigestion of the stomach and bowels. Having recently had my attention directed to the reflex disorders produced by the congenital narrowing of the meatus urinarius as shown by the researches of 'Fesseden Otis,' I at once made an examination of the genitalia. I found the prepuce somewhat contracted, though not enough to account for the systemic conditions, the meatus very small, and on further examination found the prepuce adherent to the corona glandis throughout the whole extent. I slit open the meatus to its normal diameter, cut off the contracted prepuce and peeled it back from the gland, and the case recovered immediately.

"Another class of cases to which I wish to direct attention, more for the purpose of drawing out information than for conveying it, is that class tha tmasquerades, I might say, under the name of neurasthenia. I do not mean all the cases of neurasthenia, but those that belong to the male sex, and in which there is present an enlarged prostate. In a considerable portion of the males affected with the nervous conditions mentioned, an enlarged prostate will be found present and it has seemed to me that in the light of the investigations of Fessenden Otis it must act as a cause in producing those nervous conditions. It acts by producing a continual obstruction to the passage of the urine, as well as frequently to the seminal fluid, and by its mere presence is a continual source of irritation to the nerve centers. I should like to know if Dr. Pelton or any of those present have observed anything with reference to these cases? It certainly seems to me that the role of the enlarged prostate in the production of reflexes deserves closer study than has heretofore been given it."

Dr. Pelton in closing said he was aware of two theories of vaso-motor inhibition, viz., from the cerebro-spinal on the one hand and sympathetic on the other. He thought the preponderance of evidence was in favor of the latter. He thought Dr. Punton did not quite understand him in regard to the re-

flexes. He did indeed say there was a reflex arc in the cord, which was of sensomotor phenomena, but that there was also a reflex of similar nature in the sympathetic ganglia and could act independent of the cord. For example, when the heart of a frog was removed and stimulated by fresh blood, it would continue to beat for some time.

In reply to Dr. Punton's question if a late author did not consider the disappearance of the Column of Turk into the lateral columns, said he was glad to accept any new investigation that looked reasonable, for only by that means are we able to advance. But as yet he thought lesions found in the brain and cord with certain symptoms existing, rather justified the presence of the column mentioned.

In answer to Dr. Carpenter's inquiry about the result of prostatic disease causing reflex neuroses, said he did not doubt its potency to produce nervous reflex. That often prostatic diseases were produced by sexual excesses, that relation of the sympathetic with the prostate through the lumbar region was similar to the case he reported. That the genito-urinary system was a great center of reflex and he had met with many neuroses caused by sexual vices, viz., palpitation of the heart, chorea, and had been able to attribute many attacks of asthma to excessive venery, by its reflex action on the bronchioles of their fiber. Whether the deceased prostate was the sole cause of the neurasthenia or sexual vices a principle factor in both would be worthy of investigation.

(*Continued in January number.*)

DR. BLACK, of Ottawa, was a caller in November.

READ Dr. S. G. Stewart's editorial on the use of chloroform in the treatment of gall stones.

THE Kansas City, Kansas, Medical Society meets bi-monthly.

Substituting Druggists.

If there is one being in trade who is more contemptible than another, it is the druggist who will substitute some cheaper preparation for that which is ordered by the physician. We have been prescribing the well-known Listerine for a long time, and in some cases the result has not been what we had a right to expect. But a patient lately brought in a bottle of what was given her on such a prescription, and of all the fiery, nauseous decoctions that were ever used for the purpose that was the worst. It no more resembled the genuine than onions do peaches. We are warning all our patients against that druggist.

W. C. BARRETT, M.D., D.D.S.,
In Dental Practitioner.

A few days ago we had the pleasure of calling upon Mr. Porter, of the Physician's Supply Company, and found him with plenty of customers and in his usual happy spirits. He promises to give us some pointers on the latest achievments in the instrument line soon.

HAVE you tried the Three Chlorides in diphtheria?

SWIFT & HOLLIDAY have some of the new Aluminum Hypodermics. They are light and elegant. See them.

IT will pay every physician to notice the various new features of the Leonard chair advertised in this issue. There is a constant improvement in physician's chairs, and the inventor of this one has reached out just a little further than any one else. It possesses all the merits of any other chair in the market and some additional ones. The knee rest with the adjustable stirrup is a most valuable convenience. It is handsome, neat, simple, and easily adjusted to suit any position desired. What more do you want?

The Northern Kansas Medical Society.

The fifteenth semi-annual meeting of this society will be held at the court house in Seneca, Kansas, on Thursday, December 10, 1891, beginning at 2 o'clock P. M.

PROGRAM.

President's Inaugural.—S. Murdock, M.D., Oneida, Kansas.

Puerperal Eclampsia.—E. W. Bliss, M.D., Hiawatha, Kansas.

A Case of Chronic Intestinal Obstruction.—J. C. McClintock, A.M., M.D., Topeka, Kansas.

What can be done in Cerebral Surgery?—Emory Lanphear, A.M., M.D., Kansas City, Missouri.

Fractures of the Shaft of the Humerus.—Fred. W. Kitchen, M.D., Sabetha, Kansas.

Some Affections of the Eye.—Grant Cullimore, M.D., Atchison, Kansas.

Cases in Surgery.—J. M. Richmond, M.D., St. Joseph, Mo.

Ample time will be afforded for a full discussion of each subject. Clinics may be introduced at any interim of the meeting. The evening session will furnish opportunity for hearing the reports of cases in practice.

M. M. WACHTER, M.D., *Secretary*,
Baileyville, Kansas.

S. MURDOCK, M.D., *President*,
Oneida, Kansas.

N. E. K. M. and P. A.

The society met in the office of Dr. P. R. Moore, in Effingham, November 10, 1891, at 6 o'clock P. M.

In the absence of the president, Dr. Paddock, Dr. Fitzgerald, the vice-president, occupied the chair.

Members present: Drs. Jos. Haigh, Granada; D. H. Fitzgerald, Wetmore; S. M. Riggs, Muscotah; P. R. Moore, Effingham; J. C. McClintock, Topeka.

Visiting Physicians: Drs. D. D. Wilson, of Nortonville, and R. S. Magee, of Topeka.

Before proceeding to business, Dr. Moore announced that a well-loaded table awaited us, and right here we want to say that Mrs. Dr. Moore had a table loaded with the most tempting viands. We are under obligations to the doctor and his estimable lady for the bountiful repast enjoyed.

After supper the regular order of business was taken up.

Dr. Jos. Haigh gave a verbal report on "Cancers and Ulcers," in which he said that a cancer is a growth that enlarges itself in the surrounding tissues by infiltration, while a benign tumor enlarges itself by pushing away the tissues and encapsulating itself. Three varieties—the scirrhus, hard stone-like; encephaloid, brain-like; and epitheloid and colloid. I believe that cancers are local. Afterwards they become constitutional. A wart, though harmless, may become malignant by continued irritation. The mammary glands and uterus, because of irritation and changeable conditions through which they pass—congestion and involution—are frequent sites of cancer. Believe they can be removed if taken early, before lymphatics are involved, without fear of return. With respect to treatment: The knife, if taken early, is the best means. Caustics are painful and destroy the normal tissues as well as the cancerous. If caustics are used they should not be used so strong as to form an eschar and thus cover up the underlying tissue and prevent the caustic from acting on the deeper infiltrated tissues. He advocated the use of the binoxide of potassium, made from the common sorrel plant, made into a paste and applied directly to the cancer. The caustic treatment is based on the fact that the embryonic cell of which the cancer is composed will not stand the same amount of irritation as the surrounding tissue cells. The trouble with the caustic plan of treatment is that it coagulates the tissues and prevents the further penetration of the caustic. He has had marvelous success with the binoxalate of potassium treatment.

The paper was warmly discussed by Drs. Riggs, Fitzgerald, Moore, McClintock, Wilson, and Magee.

Several interesting cases were brought into the society for examination. One a fracture

of the humerus with union, but following it a wrist drop. Another, paralysis of lower extremities with inability to use the feet and talipes valgus. Another, a nevus just below the left ear.

These cases were all intensely interesting, calling out varied methods of treatment.

Dr. J. C. McClintock gave a verbal and concise report of the latest methods of treatment of "Hemorrhoids—Surgical and Otherwise." The discussion of this report was continued to quite an extent, after which Dr. Fitzgerald gave his ideas on the dressing of wounds, which was discussed by all the members present.

The next monthly meeting of the Northeastern Kansas Medical and Protective Association will be held at the office of Dr. S. M. Riggs in Muscotah, on Tuesday, December 15, 1891, commencing at 6 o'clock P. M.

PROGRAM.

Clinics.

Diphtheria.—Dr. Fitsgerald, Wetmore.

Dislocations.—Dr. Farrar, Atchison.

Diseases of the Integument of the Eye Lids and Tarsus.—Dr. Magee, Topeka.

Pneumonia.—Dr. Paddock, Netawaka.

All doctors cordially invited.

DR. L. P. PADDOCK, *President.*

S. M. RIGGS, *Secretary.*

To Dr. Moore belongs the credit (largely) for the successful and interesting meeting. It was a practical meeting full of practical clinical experienc.

South Kansas Medical Society.

Minutes of the meeting of the South Kansas Medical Society held in Hutchinson, Kansas, November 17, 1891.

Meeting called to order by President J. W. McCracken.

Roll-call found about forty physicians present.

Minutes of last meeting read and approved.

Committee of arrangements reported, and Dr. Colliday welcomed the physicians to Hutchinson.

The chair appointed Drs. J. W. Maguire, J. T. Axtell and A. S. Cloud as board of censors.

Motion by Dr. Furley "that the privileges of the floor be granted to visiting physicians, and that they are hereby invited to participate in the discussion of papers."

Carried.

Chair appointed Drs. Wetherby, Klippel and Shelly as auditing committee.

Secretary's and treasurer's reports read and referred to auditing committee.

Application for membership was made by Dr. M. O'Brien, of Topeka; Dr. M. B. Ward, Topeka; Dr. C. H. Bacon, of Hutchinson; and Dr. R. A. Stewart, of Hutchinson.

Drs. O'Brien and Ward were elected to honorary membership, and Drs. Bacon and Stewart to regular membership.

Auditing committee reported the accounts of the secretary and treasurer as correct.

Secretary's report showed the expenses of the society since last meeting to be $23.45. The receipts of this meeting were $29.50.

Treasurer's report shows a balance on hand at the beginning of this meeting of $82.70.

Board of censors reported favorably on all application for membership, and the society instructed the secretary to cast a favorable ballot.

The resolution as submitted at the May meeting to change constitution received no opposition, and section 2, article 5 of the constitution was changed to read as follows:

"All officers elect shall assume the functions of their respective offices at the close of the meeting at which they are elected."

Motion, as submitted at last meeting, to remit dues to members during their resident absence from the state and who subsequently return to the society was tabled indefinitely.

The following officers were elected for 1892:

President.—Dr. L. S. Hall, of Augusta.

First Vice President.—D. J. T. Axtell, of Newton.

Second Vice President.—Dr. S. T. Shelley, of Mulvane.

Secretary.—Dr. O. B. Whittecar, of Peabody.

Treasurer.—Dr. C. C. Furley, of Wichita.

Place of next meeting, Wichita.

Dr. M. B. Ward made a very interesting verbal report of a case of diseased ovaries and tubes, and exhibited the same which he had recently removed with the happy result of immediate relief and speedy convalescense of his patient.

The society voted Dr. Ward a vote of thanks for the report of the case and for the opportunity of seeing the specimens.

The retiring president, Dr. McCracken, delivered a very able and interesting address which will appear in the JOURNAL.

The program was carried out in full, and the papers fully discussed.

The South Kansas Medical Society is growing in interest and usefulness, and those present at this meeting returned home feeling that they had been well repaid for the day off regular duty.

The discussions of the papers will appear in connection with the published articles.

O. B. WHITTECAR, M.D.,
Secretary.

THE Western Association of Obstetricians and Gynecologists, to be organized in Topeka, December 29, will be composed of representative physicians and surgeons who are practising these branches as specialists; and also those who desire to fit themselves to do so, who reside in the territory named in the resolutions as published in the November number of the JOURNAL.

Dr. M. B. Ward has received letters from most of the prominent specialists who are practicing and teaching in the territory mentioned, all of whom heartily approve the organization and promise their presence and support.

THE KANSAS MEDICAL JOURNAL is requested to extend a cordial invitation to all who are practicing or wish to practice obstetrics and gynecology to the exclusion of other branches, to be present and aid in the organization of this much-needed society.

WHO will be the medical minister of public health in the next cabinet?

The Metric System.

Several British consuls have recently warned their countrymen they were losing considerable trade in foreign countries owing to their persistent use of English weights and measures in their circulars and price-lists, which were perfectly unintelligible to most of the foreign dealers, whereas their French, German and other competitors used the metric system which was familiar to everybody and naturally attracted custom. These warnings apply equally well to the exporters of the United States.

The use of the metric or decimal system was authorized by our laws many years ago, but the use has not yet been made compulsory; hence the majority of people cling to the old system and dislike to change, although the metric is more simple and easily understood. The metric system is so much more convenient, saves so much time and has now become so generally adopted throughout the world that the United States ought no longer refuse to fall into line. A very little pressure would suffice to bring about the change. It would do the business probably if congress were simply to pass a law requiring that estimates, contracts and bills specifying weights or measures when not made out metrically must bear a revenue stamp of one dime. Rather than pay a small tax, everybody would at once use the decimal system, and the change would be as smooth as the system itself.—*Scientific American*, (N. Y.,) October 24; *Literary Digest*, (N.Y.,) October 31.

Plain Talks With Physicians.

What would be thought of a lawyer with an important case in hand who would take no measures to secure the presence of his most important witness on the day of his trial; or the soldier, who, with the most approved weapons, was careless of his ammunition. Theirs would be short careers. And yet the physician with life dependent upon his efforts, equipped with a thorough medical

education, with a full appreciation of the case in hand, and who, with reliable drugs could effect a cure, often prescribes his remedies with no knowledge of their maker, and therefore of their quality. Is this common sense or common prudence? Do you purchase your hat or your coat after this fashion? Certainly not; then why your medicines? Have you ever thought of it in this light, doctor?

You must know that there are reliable and worthless pharmaceuticals. Your druggist may be perfectly honest in his convictions that his stock is reliable, but too few pharmacists ever test the quality of the drugs purchased. Many are influenced to sell an inferior quality through the greater margin of profit in it. The only safe rule is to specify, in prescribing, the product of the manufacturer that you know to be absolutely reliable, and see that your request is carried out, and that your druggist keeps in stock the products you want.

Parke, Davis & Co. claim that their facilities for securing the highest quality of drugs and their preparations are unequalled. They guarantee every unopened package from their laboratory absolutely as represented.

Regarding some of their products they make the following terse statements:

Anodyne Pine Expectorant, P., D. & Co., is a most efficacious combination in pulmonary and bronchial troubles.

Pepsinum Purum in Lamellis, P., D. & Co., is the standard pepsin.

Soluble Elastic Capsules of Cod-liver and Castor Oils, P., D. & Co., are acceptable to any patient.

P., D. & Co.'s Cocaine Case Improved is very convenient.

Cascara Cordial, P., D. & Co., is an agreeable remedy where a laxative is suggested in the treatment of constipation.

Fluid Extract Ergot, P., D. & Co., is the most reliable fluid extract of this drug.

MEMBERSHIP in the American Pharmaceutical Association is obtained only by election at the annual meeting. "Every pharmacist and druggist of good, moral and professional standing, whether in business on his own account, retired from business or employed by another, and those teachers of pharmacy, chemistry and botany who may be especially interested in pharmacy and materia medica" are eligible for membership. For blank application and further information address Dr. H. M. WHELPLEY, 2729 Washington avenue, St. Louis, Mo., chairman of the committee on membership.

LITTLE THINGS.

ANDROLOGY is a paying specialty.

HAVE the sick room well lighted—sun light.

STRYCHNINE is used as an antidote for snake bite in Australia.

WHEN administering chloroform note the action of the heart, but watch the respiration especially.

TWO fruitful causes of constipation mentioned by Dr. Lange are eating too much and chewing too little.

IT is claimed by good authority that two infectious diseases can exist in the same person at the same time.

IN every case of gonorrhœa warn your patient of the danger of conveying the disease to the eyes by the fingers, and of the fearful results of gonorrhœal ophthalmia.

SNEEZING favors the expulsion of the child in a case of labor, hence the use of tobacco snuff or pepper, or other substances that will bring on the paroxysm by irritating the scheneiderian membrane, will hasten a tardy delivery.

AN ounce of camphor dissolved in three ounces of turpentine has been used in Columbia Hospital for Women to check secretion of milk in mastitis. It relieves pain, diminishes induration, and reduces inflammation. Care should be taken, however, that the part should not be so tightly covered that the application shall produce irritation of the surface.—*Obstetrical Gazette.*